CLAIMS

What is claimed is:

1. A multi-polarized forward feed and dish configuration for transmitting and/or receiving radio frequency (RF) signals, said configuration comprising:

a conductive reflector dish having a focal point and a vertex point; and

a multi-polarized forward feed element positioned substantially at said focal point, and wherein said feed element comprises at least two radiative members each having a first end and a second end, and wherein said second ends of said radiative members are electrically connected at an apex point and are each disposed outwardly away from said apex point toward said vertex point at an acute angle relative to an imaginary plane intersecting said apex point.

2. The feed element of claim 1 further comprising a conductive ground reference located at and/or to a side of said imaginary plane that is away from said apex point, and being electrically isolated from said radiative members.

3. The feed element of claim 2 wherein said conductive ground reference comprises as least one of a ground braid of a coaxial connection, a cylindrical sleeve, a conical sleeve, and a ground plane.

4. The feed element of claim 2 further comprising a dielectric material serving to mechanically connect, at least in part, said radiative members to said ground reference while electrically insulating said radiative members from said ground reference.

5. The feed element of claim 4 further comprising an electrical conductor electrically connected to said radiative members at said apex point and extending away from said apex point toward a ground reference side of said feed element

through said dielectric material to allow connection to a transmission line for interfacing said radiative members to a radio frequency transmitter and/or receiver.

6. The feed element of claim 2 further comprising an electrical connector to allow connection of said radiative members and said ground reference to a transmission line.

7. The feed element of claim 3 wherein said ground plane comprises a circular conductive ground plane having a radius of at least ¼ wavelength of a tuned radio frequency.

8. The feed element of claim 1 wherein each of said radiative members are substantially linear and have a physical length determined by a pre-defined radio frequency.

9. The feed element of claim 1 wherein said acute angle between each of said radiative members and said imaginary plane is between 1 degree and 89 degrees.

10. The configuration of claim 1 further comprising a mounting mechanism to allow mounting of said feed element at said focal point.

11. The feed element of claim 1 wherein said radiative members are equally spaced in angle circumferentially around 360 degrees.

12. The feed element of claim 2 further comprising a truncated pyramidal conductor that includes a closed truncated side, an open base side, and three closed trapezoidal sides, and wherein an open interior space of said truncated pyramidal conductor encompasses said radiative members such that said apex point is approximately at a center point of said closed truncated side and said radiative

members are disposed outwardly away from said closed truncated side toward said open base side.

13. The feed element of claim 12 wherein said truncated pyramidal conductor is electrically connected to said ground reference and is electrically isolated from said radiative members.

14. The feed element of claim 12 wherein said closed truncated side is electrically connected to said ground reference and is electrically isolated from said radiative elements and from said closed trapezoidal sides.

15. The configuration of claim 1 wherein said conductive reflector dish comprises one of a parabolic dish, a parabolic dish with at least three distinct sectors, a partial parabolic dish, and a partial parabolic dish with at least three distinct sectors.

16. A multi-polarized forward feed for transmitting and/or receiving radio frequency (RF) signals to/from a reflector dish, said forward feed comprising:

at least two radiative members each having a first end and a second end, and wherein said second ends of said radiative members are electrically connected at an apex point and are each disposed outwardly away from said apex point at an acute angle relative to an imaginary plane intersecting said apex point; and

a truncated pyramidal conductor that includes a closed truncated side, an open base side, and three closed trapezoidal sides, and wherein an open interior space of said truncated pyramidal conductor encompasses said radiative members such that said apex point is approximately at a center point of said closed truncated side and said radiative members are disposed outwardly away from said closed truncated side toward said open base side.

17. The forward feed of claim 16 wherein said truncated pyramidal conductor serves as a ground reference and is electrically isolated from said radiative members.

18. The forward feed of claim 16 wherein said closed truncated side serves as a ground reference and is electrically isolated from said radiative members and from said closed trapezoidal sides.

19. The forward feed of claim 17 further comprising an electrical connector to allow connection of said radiative members and said truncated pyramidal conductor to a transmission line.

20. The forward feed of claim 18 further comprising an electrical connector to allow connection of said radiative members and said closed truncated side to a transmission line.

21. The forward feed of claim 16 wherein each of said radiative members are substantially linear and have a physical length determined by a pre-defined radio frequency.

22. The forward feed of claim 16 wherein said acute angle between each of said radiative members and said imaginary plane is between 1 degree and 89 degrees.

23. The forward feed of claim 16 wherein said radiative members are equally spaced in angle circumferentially around 360 degrees.

24. A multi-polarized forward feed and dish configuration for transmitting and/or receiving radio frequency (RF) signals, said configuration comprising:

a first conductive reflector dish having a first focal point;

a second conductive reflector dish having a second focal point and being substantially identical to said first conductive reflector dish;

a first multi-polarized ground plane beam antenna positioned substantially at said first focal point to act as a transmit/receive feed for said first conductive reflector dish; and

a second multi-polarized ground plane beam antenna, being substantially identical to said first multi-polarized ground plane beam antenna, positioned substantially at said second focal point to act as a transmit/receive feed for said second conductive reflector dish.

25. The configuration of claim 24 further comprising a two-port power divider to feed a radio frequency signal in phase to both said first multi-polarized ground plane beam antenna and said second multi-polarized ground plane beam antenna, and to combine radio frequency signals received from both said first multi-polarized ground plane beam antenna and said second multi-polarized ground plane beam antenna.

26. The configuration of claim 24 wherein said first multi-polarized ground plane beam antenna and said second multi-polarized ground plane beam antenna each comprise a parasitic reflector element having a first end and a second end, at least one parasitic director element having a first end and a second end, a multi-polarized driven element positioned co-linearly with and between said reflector element and said at least one director element, and an electrically conductive ground plane being electrically connected to said reflector element and said at least one director element at said second ends and being electrically isolated from said driven element.

27. The configuration of claim 26 wherein said multi-polarized driven element comprises at least two radiative members each having a first end and a second end, and wherein said second ends of said radiative members are electrically connected at an apex point and are each disposed outwardly away from said apex

point at an acute angle relative to and on a first side of an imaginary plane intersecting said apex point.

28. The configuration of claim 27 further comprising two electrical connectors to allow electrical connection of said radiative members and said ground plane of each of said multi-polarized ground plane beam antennas to said two-port power divider.

29. The configuration of claim 27 wherein said first and second multi-polarized ground plane beam antennas are oriented with respect to each other such that said apex points of said driven elements of said first and second multi-polarized ground plane beam antennas are separated by a predetermined distance based on, at least in part, a predetermined radio frequency of operation, and such that said imaginary planes intersecting said apex points are perpendicular to each other.

30. The configuration of claim 27 wherein each of said radiative members are substantially linear and have a physical length determined by, at least in part, a pre-defined radio frequency of operation.

31. The configuration of claim 27 wherein said acute angle between each of said radiative members and said imaginary plane is between 1 degree and 89 degrees.

32. The configuration of claim 27 wherein said radiative members are equally spaced in angle circumferentially around 360 degrees.